

and six dead shells. The living snails were taken from the sides of the large rocks beneath the rocky ledges, all apparently restricted to the shaded area.

*Thysanophora hornii* (Gabb). One dead shell was found in the same habitat as that described for *R. indentata paucilirata*.

#### SUCCINEIDAE

*Succinea avara* Say. Collected in Fern Canyon; attached to a moist rocky ledge partially covered with maiden-hair ferns, mosses and liverworts. Also taken in Musquiz and Limpia Canyons. In Musquiz this species was found moving about over the edges of pot-holes (Fig. 2) and over the rank grass (*Bouteloua*) that covered marshy places in the canyon bed.

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### NEW MOLLUSKS FROM THE PANAMIC PROVINCE

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(Plate 6)

#### VERMETIDAE

*Petalococonchus innumerabilis* n. sp. Plate 6, figs. 8, 8a, 8b.

Punta Picos, near Boca Pan, Province of Tumbes, Peru. (Olsson), type, 164626. ANSP.

A vermetid growing in compact, closely interlaced masses. The initial stage is glossy, globose-conic, of about  $1\frac{1}{2}$  whorls; followed by a loosely coiled stage with tube at first with indistinct, incremental sculpture only, about 0.7 mm. diameter. This is followed by a closely coiled, strongly sculptured stage, the 8–12 whorls generally in close contact; then a loosely coiled, corkscrew stage follows, gradually becoming more drawn out, and about 1.5 to 2 mm. diameter. Sculpture of coarse, irregular cords parallel to the whorls, or sometimes more strongly spiral in places, and rather coarse but unevenly developed striae of growth. In the closely coiled stage, there are two columellar lamellae (figs. 8a, 8b, the posterior one double the size of the anterior, usually thin and simple, but in some whorls it is bifid or trifid; the smaller lamellae is also bifid in places. In the later whorls of the tube, these lamellae disappear. Individual shells appear to be 50 or 60 mm. long, and up to 2 or 2.3 mm. in diameter at the anterior end.

The group of which part is figured, is about 23 cm. long. It was found on the beach. It grows in large masses, like *P. varians*



2



1



3



4

1, View at head of Fern Canyon. 2, Pothole in Musquiz Canyon. 3, Pothole deep in igneous rocks. 4, Stream flowing from Phantom Lake.



Orb. In this mass three generations appear to be superposed one above another, parts of two shown in the figure.

#### NUCULANIDAE

##### *Nuculana (Adrana) suprema* n. sp. Plate 6, fig. 1.

Beach between Port Guanico and the mouth of the Guanico river, Los Santos province, Panamá (Olsson), type 164608 ANSP.

The shell is long, strongly compressed, subequilateral, with dark olive-brown epidermis (largely or wholly lost in specimens seen); glossy. The dorsal outline is nearly straight, the ventral margin gently convex, straightened or slightly concave towards the posterior end, the greatest height being about the anterior third of the length. Anterior end more obtuse than the posterior. Dorsal areas extremely narrow, bounded by inconspicuous angles. Sculpture of weak growth lines and excessively fine and clear-cut longitudinal striae, obliquely crossing the lines of growth posteriorly, mainly curving with them in the anterior half. They are wanting in a band along the dorsal side, but extend nearly to the ends. Interior white, the pallial sinus occupying more than one-third of the total length, truncate at the end. Tooth row long, occupying 60% of the whole length, anterior and posterior series of about equal length, teeth very small, V-shaped. Cartilage pit very shallow, about 10 mm., long in the type. Length 107 mm., height 23.5 mm., semi-diameter 4.6 mm.

The largest *Adrana*, distinguished also by the central beaks, those of *N. elongata* Sowerby being a little anterior.

##### *Nuculana (Adrana) tonosiana* n. sp. Plate 6, fig. 4.

Estero Bucaru, mouth of the Tonosi River, Los Santos, Panamá. Type 164025 ANSP., paratypes in Olsson collection.

The shell is small for this group, elongate, strongly compressed, subequilateral, white to pale cream-color. The beaks are small, a little anterior of the middle. The dorsal margin is weakly arched by the beaks to nearly straight. The anterior end is bluntly angular at the termination of the dorsal margin, rounded below. Posterior end lower than the anterior, slightly pointed, elevated at its junction with the dorsal margin. Posterior-dorsal area long and narrowly lanceolate, smooth, bounded by a strongly crenulated ridge, the anterior-dorsal area similar and smaller, with the bounding carina only weakly crenulated.

The sculpture consists of fine, regular, raised threads over the middle of the surface, but which become stronger and a little irregular in the vicinity of the dorsal margins. Near the anterior-dorsal margin, these threads are wavy and irregular, while some are seen to bifurcate. At the posterior end, there is a bordering, narrow band across which the threads become smoother but give rise to coarse crenulations on the posterior carina. Tooth band narrow, the posterior set of teeth, about a fourth longer than the anterior. Teeth very numerous in each set, very small in the middle, becoming progressively larger towards the ends. Pallial sinus ample, extending to the posterior quarter. Interior white to glassy. Valves gaping slightly at both ends. Length 25.5 mm., height 7 mm., diameter 3 mm.

This species resembles a young *N. arcuata* Sowerby but is distinguished by details of its sculpture. In *arcuata*, the thread-like ribs are regular over the whole surface and not noticeably stronger or waved along the anterior-dorsal margins as in our species. The present species is also constantly smaller, our collection containing more than 24 shells none of which exceeds 26 mm. in length.

*N. arcuata* (Plate 6, figs. 2, 3) is abundant along the north Peruvian and Ecuadorian coast, and measures from 31 to 42 mm. in length. The specimens figured are from Point Ancon, Santa Elena, Ecuador. The identification was confirmed by Mr. LeB. Tomlin, from the type in B. M.

#### PERIPLOMATIDAE

**ALBIMANUS** new subgenus of *Periploma* Schumacher. Shell strongly inequilateral and inequivalve, longer than high, with 5 strong, radiating ribs projecting at the margins; beaks not slit. Type *P. (A.) pentadactylus*.

**Periploma (Albimanus) pentadactylus** n. sp. Plate 6, figs. 5, 6, 7.

Beach between Port Guanico and the mouth of the Guanico river, Los Santos province, Panamá (Olsson), type 164610 ANSP.; paratypes in Olsson collection.

The shell is white, oblong, much longer than high, plump, conspicuously inequivalve, the right valve being strongly convex, the left valve weakly convex. Right valve (figs. 5, 6) with a wide beak at the posterior fifth of the length, a deep, escutcheon-



like area defined by a rib; dorsal margin strongly arched, posterior margin truncate, anterior end running out in a point, basal margin trilobed. Sculpture of five, radiating ribs, the second and the fourth bifid, the third less distinctly so, the first rib simple, running to the anterior basal extremity, the small fifth rib bounds the escutcheon. Delicate lines of growth are festooned between the ribs. The external ribs project also in the interior. Left valve (fig. 7) with very weak ribs corresponding to those of the right. The left valve is smaller than the right. The hinge line is thin, with a small, strongly oblique chondrophore. The pallial sinus extends to between a third and a half of the total length.

Length 21.3 mm., height 15.3 mm., diameter 7 mm. Type.

Length 21 mm., height 13 mm. Paratype.

The ribs begin when the shell is 3.5 to 4 mm. long. In the type species of *Periploma* and *P. angulifera* Phil., of the Caribbean region, there is a rib bounding the short posterior end, but we have found none with sculpture resembling this one.

#### MACTRIDAE

*TUMBEZICONCHA*, new subgenus of *Mactra*. Shell thin, concentrically plicate, like *Raeta*, but the plicae oblique across the posterior portion, and with irregular concentric wrinkles of growth (not vermiculate, as in *Raeta*); posterior-dorsal areas defined simply by the ending of the plicae, not marked off by an angle or keel. Pallial sinus extending beyond the middle. Hinge as in *Mactrella*. Genotype *Mactra thracioides* Adams & Reeve, Plate 6, fig. 9.

In external form and sculpture, *Tumbeziconcha* resembles *Raeta* more closely than it does the plicate *Mactras* such as *Harvella* and *Mactrinula*. It is in the hinge structure that the shell shows its relationship with the true *Mactras* and particularly to *Mactrella*. The hinge is fully developed and is quite similar to that of *Harvella elegans*. The ligamental scar is distinct and separated from the chondrophore by a thickened lamina. The posterior arm of the cardinal tooth lies along the anterior side of the chondrophore, its upper end fused with the anterior arm. Lateral teeth are strong, those of the left valve fitting between two laminae in the right.

In outline the shell is shortly subelliptical but with the beaks in front of the middle, so that the posterior end is somewhat